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ABSTRACT

Focusing on student success strategies in the community college, this monograph provides a policy statement by the National Council of Instructional Administrators (NCIA) and profiles winners in the NCIA's 1992-93 exemplary program competition. First, the policy statement is provided, defining student success and providing strategies related to admissions/orientation, classroom techniques, curriculum development, faculty issues, and college-wide efforts. Next, one-page descriptions are provided of the following winning programs: (1) a microcomputer-based physics laboratory at Seminole Community College (SCC) (Classroom Strategy, Winner) in which students learn in laboratory situations using computers to replicate experiments; (2) the Workforce 2000 Skills Center at Southwestern Oregon Community College (Classroom Strategy, Honorable Mention), which offers 5 weeks of pre-vocational instruction, career exploration, and personal development services for unemployed individuals; (3) the Making Choices for Student Success program at College of DuPage (Faculty Strategy, Winner), an inservice faculty forum that engages teachers in debates regarding four approaches to teaching: imparting information, training students for careers, promoting personal growth, and developing civic sense; (4) a faculty development program at the Borough of Manhattan Community College (Faculty Strategy, Honorable Mention) emphasizing reading, speaking, and writing in mathematics instruction; (5) an integrated arithmetic and algebra approach at SCC (Curriculum Strategy, Winner) which has shown positive success rates; and (6) Project Quickstart at Central Florida Community College (Curriculum Strategy, Honorable Mention), offering intensive summer programs to disadvantaged and non-traditional students to eliminate the expense of extra semesters. (ECC)

ED 368 402

The National Council of Instructional Administrators

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STUDENT SUCCESS STRATEGIES

U.S. DEPARTMENT OF EDUCATION
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NATIONAL COUNCIL OF
INSTRUCTIONAL ADMINISTRATORS

Leadership • Innovation • Advocacy • Development

November, 1993

Greetings from the National Council of Instructional Administrators!

With the distribution of this monograph, two regular services of NCIA to its members converge.

Periodically, either in response to a request by the American Association of Community Colleges or as an initiative of the nations's community college instructional administrators, NCIA defines and articulates a "national position paper." Following this pattern, in December, 1990, the NCIA Board of Directors staged a colloquy on "Student Success." Representatives of several sister AACC affiliated councils were invited to join the NCIA Board in pursuit of a document which could serve as a catalyst for our colleges to assess, discuss, and improve their strategies for student success. This colloquy resulted in an NCIA position paper entitled: "Promoting Student Success in the Community College." In November, 1991, the AACC Board of Directors adopted this document as an "official policy statement."

Since 1987-1988, NCIA has conducted an annual exemplary program award competition. Those community college programs which earned first and second place in several categories have been annually recognized at the AACC Convention. Additionally, all entries in the competition have been annually profiled and published in a book entitled: Community College Exemplary Instructional Programs. This annual booklet has promoted extensive networking among NCIA members. For 1992-1993, the categories for NCIA's annual exemplary program award competition were refocused to follow up on the new national policy statement on "Promoting Student Success in the Community College." Thus, the modest monograph in hand profiles the first winners in NCIA's new exemplary program award competition--focusing upon several categories of student success strategies. We hope these strategies, along with the policy statement on promoting student success, will help you generate strong discussion about how your college is assuring the success of it's students.

The 1993-1994 exemplary student success strategy award competition is now open! The form enclosed with this monograph announces the competition and guides you in submitting entries. If you believe that your college is pursuing exemplary student success strategies--innovative, productive strategies which could be adopted/adapted by other colleges--do consider entering this award competition today. **February 1, 1994** is the deadline for submission.

Best wishes for a very successful academic year.

Yours sincerely,

Carlton R. Williams

3 Carlton R. Williams, Ph.D.
President, NCIA

NATIONAL COUNCIL OF INSTRUCTIONAL ADMINISTRATORS

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Promoting Student Success in the Community College

An NCIA Position Statement

Adopted as an AACC Policy Statement, November 1991

I. Student Success: A Definition

Student success has always been a dominant article of faith in the community college credo. Fundamental to that belief are strong commitments to student access, student retention, and student achievement. The ultimate aim is a quality collegiate education, one in which student success is closely linked with, dependent upon, and defined in terms of effective teaching resulting in meaningful learning.

"Student success" and the "successful student" may thus be defined as follows:

Learning is at the heart of student success. Successful students are successful learners who identify, commit to, and attain their education goals. They acquire and demonstrate the skills, knowledge, attitudes and self-direction needed to perform ethically and productively in society, to adapt to change, to appreciate diversity, and to make a reasoned commitment on issues of importance.

This definition of student success requires, for its achievement, a precise awareness on the part of a college of exactly *who* its students are and *what* steps to success it needs to provide --and a willingness continually to assess and improve those steps.

II. Student Success: Current Strategies

While each college must fashion its particular strategies to address the needs of its own students, there are general trends and ideas that characterize the student success efforts of all flagship community colleges. Basic to these fundamental strategies are guidelines set forth in two well-known documents: (1) the 1984 National Institute of Higher Education Report *Involvement in Learning: Realizing the Potential of American Higher Education*, and (2) the 1987 *Faculty Inventory: 7 Principles for Good Practice in Undergraduate Education*, published by Art Chickering and Zelda Gamson under the auspices of the American Association for Higher Education, the Education Commission of the States, and the Johnson Foundation. In the former, three "universal conditions of excellence" were identified:

1. Student involvement in the learning process;
2. High expectations by the institution;
3. Regular assessment and feed back for evaluative purposes.

In the latter, the "7 Principles" were as follows:

1. Encourage student-faculty contact.
2. Encourage cooperation among students.
3. Encourage active learning.
4. Give prompt feedback.
5. Emphasize time on task.
6. Communicate high expectations.
7. Respect diverse talents and ways of learning.

The suggestions below regarding student success incorporate the principles from these two sources, additional principles from other written sources, and the practices of outstanding community colleges across the nation -- from the distinct perspective of student success as defined above.

Admission and Orientation Strategies for Student Success:

- Begin contact with students before they enter the college through outreach and articulation activities.
- Provide clear, supportive financial aid, admissions, and registration procedures.
- Provide basic skills assessment and resulting placement at appropriate levels.
- Provide a thorough college orientation program, one which includes emphases on basic study skills and learning to learn.
- Gather data each semester on each student that will permit tracking and assessment of student success.
- Provide an advisement system that is available to the student from admission to eventual graduation or transfer.

Classroom Strategies for Student Success:

- Encourage student-faculty contact.
- Encourage cooperation among students.
- Encourage active learning.
- Give prompt feedback.
- Emphasize time on task.
- Communicate high expectations.
- Respect diverse talents and ways of learning.
- Make full use of advanced technology for both classroom teaching and classroom management.
- Relate subject matter to students' experiences and interests.
- Emphasize understanding rather than coverage of course material.
- Share with students the desired learning outcomes for the course.
- Incorporate reading, writing, speaking, and critical thinking activities -- regardless of subject matter.
- Demonstrate the interconnectedness of the individual course with courses in other disciplines and with general education.

- Focus on formative assessment rather than summative testing.
- Use classroom research strategies to monitor and improve teaching and learning.
- Relate subject matter to current issues – local, national, international.

Curriculum Strategies for Student Success:

A community college curriculum designed to assure student success will include the following characteristics:

- a well-developed, extensive remedial program;
- a core curriculum of general education courses;
- core curriculum requirements for graduation;
- writing, reading, speaking, and critical thinking emphases in every course;
- entry and exit competencies for individual courses; complementary entry and exit competencies for courses taken sequentially;
- strong international and multicultural components;
- an efficient, timely process for curriculum review and change.

Faculty Strategies for Student Success:

The best way to assure student success is to assure faculty success. Among the strategies whereby leading community colleges are assuring faculty success are the following:

- Hiring additional minority teachers to reflect the ethnic makeup of the student body and the community;
- Requiring demonstrated communications skills – reading, writing, speaking, and critical thinking – in all disciplines as a condition of hiring;
- Hiring only those strongly committed to student success;
- Reviewing closely in that regard the teaching applicant's portfolio – a portfolio including syllabi, tests, statement of teaching philosophy etc. – as well as the applicant's curriculum vitae;
- Maintaining an appropriate ratio between full-time and part-time faculty members;
- Providing an effective orientation program for all new faculty members;
- Structuring the college reward system to encourage and recognize outstanding teaching;
- Establishing a thorough, multifaceted faculty evaluation system for formative purposes;
- Providing incentives and multiple and varied opportunities for faculty growth and development in the subject matter and in pedagogy, including such topics as use of technology, classroom research dealing with a multicultural classroom, and dealing effectively with different learning styles;
- Stressing "scholarship" and "research" in a way that links both pursuits closely to teaching and learning;
- Encouraging cross-disciplinary and team teaching.

College-wide Strategies for Student Success:

- Create and maintain a climate that encourages and rewards innovation, creativity, and risk-taking on the part of all.
- Foster a spirit of communication, coordination, and cooperation among all units of the college, but especially between student development and instruction in areas such as assessment, placement, advisement, and extra-curricular emphases.
- Develop a student tracking system that provides significant data for assessment and improvement. The system should provide data on career students, transfer students and continuing education students.
- Work from a governance model in which all – including students – participate in determining directions and making decisions.
- Make sure that basic administrative matters such as organizational structure, planning processes, and budgetary allocation of resources – personnel, facilities, equipment – reflect the college's commitment to student success.
- Develop a purpose statement or statement of philosophy that is real, that is measurable, and that places student success in the center of the circle or at the top of the list of priorities.
- Maintain a strong mentoring and tutoring program for students.

The responsibility for tailoring these guidelines to a specific college and effectively implementing them rests with the leadership of the institution. In the process, any college serious about student success will discover additional essential strategies not mentioned here.

Afterword: Beyond the Campus

Professional organizations like AACC and its affiliate councils represented at the Student Success workshop can also play a vital role in the implementation of these strategies for student success:

- By highlighting successful activities in newsletters, periodicals, monographs, and other publications.
- By sponsoring forums, workshops, summer institutes, and teleconferences dealing with student success issues.
- By creating additional recognition and reward programs which highlight successful teaching and successful learning.

The National Council of Instructional Administrators, through such activities as its annual Exemplary Instructional Programs Awards and the 1990 Student Success Workshop, is already playing a prominent role. We pledge to redouble our efforts on behalf of student success; we invite the readers of this paper to join us.

Classroom Strategy - Winner
Strategy/Initiative: CLASSROOM/MICROCOMPUTER BASED PHYSICS LABORATORY
Submitted by: Seminole Community College
Dr. Earl S. Weldon - Chief Executive Officer
Contact Person: Larry Bigelow - (407) 323-1450 x 300

"The power of instruction is seldom of much efficacy except in those happy dispositions where it is almost superfluous." (Gibbons) This epigram is notoriously true of so much introductory physics teaching. A great deal of recent research into introductory physics instruction suggests that only a small fraction of physics students have a real understanding and feel for physics. This dismal record seems to be true of many students at community colleges as well as at institutions like Harvard University. One of the principal ingredients in this failure is that most students do not genuinely learn physics by merely listening to an instructor, and yet that is how most students try to learn the subject. On the other hand, those students that have the proverbial "happy dispositions" to master physics are those who explore and instruct themselves. To short-circuit the truth of Gibbon's epigram we have to take the students out of their cozy role as passive recipients of instruction and make them instruct themselves in physics.

What we are experimenting with at SCC is a classroom strategy where our introductory physics students are forced in a laboratory situation to behave like real physicists (albeit simple physicists). A real physicist explores, formulates hypotheses, makes predictions, designs and conducts experiments to test those hypotheses and predictions, interprets the experimental results, revises predictions and hypotheses in light of the experimental results, etc. A real physicist does not passively absorb lectures or mechanically follow a cook-book recipe when doing experiments (the results of which are preordained). One of the keys that will allow our students to be apprentice physicists is the Microcomputer Based Laboratory (MBL).

From a historical perspective, the most innovative part of this approach is not its reliance on a MBL, but in how and why a MBL is used. In our MBL we have fifteen powerful Macintosh computers as well as a wide variety of instruments to interface with the computers. To the uninitiated all of this "high technology firepower" may seem a worthy addition to the classroom simply because it acquaints students with modern technology; and I suppose the MBL serves that somewhat useful, though costly, purpose. However, the singular quality of a MBL is that it allows an enormous number of measurements to be made and digested very quickly. It is this quality that we're tapping when we try to build a philosophy of "the student as an apprentice physicist." In this strategy:

(1) The students make predictions about what will happen and state hypotheses about what's going on and why it happens that way.

(2) The students, with a minimal amount of guidance must devise experiments to test their predictions and hypotheses. Since the MBL equipment is so flexible and so quick, the student has plenty of time to run many exploratory experiments. A particular experimental question can be looked at from many different angles simply by changing different variables in the experiment and running the experiment again and again. If a particular experiment leads down a blind alley, there's still time to formulate a different experimental approach.

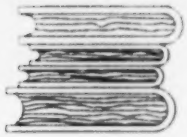
(3) The students then compare their experimental conclusions with their original predictions and hypotheses. This rapid testing of predictions and hypotheses allows students to confront any misconceptions they may have about the phenomena. In fact, if students demonstrate to themselves through testing that their predictions and hypotheses are wrong, the time efficiency of the MBL allows sufficient time to refine their predictions and hypotheses, and repeat the cycle of investigation.

To help students understand physics, make them behave like "practicing physicists."

Throughout every stage of this cycle students are encouraged to discuss, argue, and speculate with one another. Not only do students enjoy this process; it is, after all, what real physicists do.

Naturally, the value of this approach depends in large part on choosing the appropriate paradigmatic phenomena for the students to investigate. In the recent research on physics instruction there is a fair amount of consensus as to what constitute the key physics concepts and the associated misconceptions students have about them. Using this consensus, a number of physics concepts inventory tests have been designed to judge the student's understanding of key physics concepts. The early results from these tests strongly suggest that the "student as practicing physicist" philosophy and MBL technology are especially useful both in rooting out the entrenched misconceptions students have and in improving their understanding of the key concepts of physics.

This classroom strategy holds enough promise that a great deal of effort, research, and money is being spent to refine the strategy and train community college physics instructors who wish to adopt it. SCC was in October, 1992, the site of one of these workshops.



Classroom Strategy - Honorable Mention
Strategy/Initiative: WORKFORCE 2000 SKILLS CENTER
Submitted by: Southwestern Oregon Community College
Dr. Steven Krindelbaugh - Chief Executive Officer
Contact Person: Nancy Watts - (503) 888-2525

Workforce 2000 Skills Center is a creative and innovative approach to learning. It is an intensive five-week pre-vocational course of instruction and support which is offered to assist the unemployed in overcoming barriers to employment. Upon completion of the Workforce 2000 Skills Program, 95% of the students were prepared to enter further education or employment.The program provides open entry/open exit for students prior to and after the course. There is a full curriculum of academic, job search, career choice, and personal development programs available on computers. Seven staff members are involved in the total program that presents academic enhancement, career exploration, personal development, and workplace basics in an integrated format that maximizes the opportunity for success. Workforce 2000 Skills Center, although an extension of Southwestern Oregon Community College, is located about three miles from the college in a downtown facility. The center is site-based managed, and all personnel (management, faculty, clerical) form a team-managed focus that provides a helpful and non-threatening atmosphere to students. The student's experience at Workforce 2000 Skills Center becomes one of generalized association over a broad spectrum of personal social, economic, and academic concepts that are approached in a setting that is very amenable to expression of ideas and reactions. Student insight, development, and growth is the goal of each staff member.

A warm, nurturing atmosphere in a low stress environment is the essence of this successful strategy.

There are two main classroom strategies that have enabled Workforce 2000 Skills Center to become a model for success including the unique physical setting that was designed to specifically encourage learning in a comfortable, relaxed environment, and there is the special combination of caring, involved, expert staff that provides a warm, low stress environment.

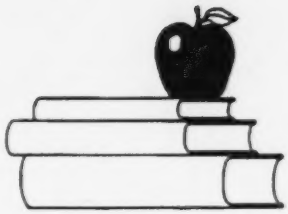
The physical design was carefully considered right down to the color which was chosen to set an atmosphere of warmth and welcome. Upon entry into Workforce 2000 Skills Center, individuals are greeted by blues of various hues and the immediate proximity of a helpful secretary; they then move freely into a large open area that has a ten-station carousel computer center and study tables that are easily moved by students for choice of arrangement; there is an area for coffee or lunch, with microwave and sinks easily accessible, and bathrooms readily available; and all teaching faculty have open desk areas so students can come for help, information, and counseling at any time (if the teacher is not in a class). This is a marked removal for the participants from the traditional college time/schedule to meet the needs of students. The Skills Center is open from 7 a.m. to 4 p.m. for student choice of learning activities. All student materials are concrete, and the activities that are done in the center are practical applications. Each student has an Individual Educational Plan including a computer menu that was mutually decided on by student and teacher to meet the individual student's needs. Large group classes (25 to 35 students) are offered from 9-12; small group classes (5 to 10 students) are offered in the afternoon; individual assistance is available at all times; computer use is available throughout the day for individual pursuits; and there are materials available for students to take home. Self-directed learning and peer learning are encouraged and fostered for greater student success.

Perhaps the most important aspect of classroom strategies, however, is the commitment, flexibility, creativity, and dedication of the staff. The right staff, with the ability to create and recreate curriculum depending upon the needs of the participants, with the ability to listen, hear, and incorporate student concerns for curriculum, professional and personal growth of their teachers, and with the ability to work together for the maximum benefit of the student, can deliver a quality program. Workforce 2000 Skills Center has done just that. Workforce 2000 students are motivated to learn what they want to learn and comment on possible improvements of course and staff work.

An atmosphere of experimentation is provided as teachers guide/facilitate students toward determining how they will gain maximum growth for themselves as set by their personal goals; student mistakes are valued as learning opportunities; consideration is given to what the student already knows and what he now wants to learn; and students are empowered to be self-determining. Opportunities are provided for student-initiated, student-directed activities. Students make choices about learning environments: Workforce 2000 Skills Center or in their home; individually or in small groups; on the computer or with paper and pencil.

Workforce 2000 Skills Center has become a model program in the state of Oregon based on successful classroom strategies. The two strongest strategies used in the classroom are a meticulously designed, pleasant physical environment and a nurturing, supportive, and foresighted staff.

Faculty Strategy - Winner
Strategy/Initiative: MAKING CHOICES FOR STUDENT SUCCESS
Submitted by: College of DuPage
Dr. H. D. McAninch - Chief Executive Officer
Contact Person: Joseph Barillari & Frances J. Fitch - (708) 858-2800



Making Choices for Student Success was an unusually creative venture for the College of DuPage 1992 faculty in-service. For over a decade, the College has maintained a Retention Committee, with representatives of faculty, staff, administrators and students. It has engaged in a variety of activities for improving student retention. In 1991, the Committee renamed itself The Committee for the Promotion of Student Success to reflect more accurately its mission and to stress its more positive results. In addressing "intervention strategies" for "students at risk," the Committee discovered an ongoing, informal debate among faculty on a fundamental issue. Faculty differed in their perception of their role in "retention" or "intervention." In fact, the informal debate could be construed as a fundamental one about the very nature of the teaching function and role: 1) Is a teacher hired to impart information? 2) To train students for an occupation? 3) To promote personal growth? and 4) To develop a civic sense? Each of these positions could influence how faculty approach the issue of intervention and ultimately, retention and student success.

These four different "choices" or approaches to teaching proved critical in defining teacher receptivity to the concepts of student success. With these fundamental orientations defined, the Committee set about building a staff in-service around the issues it raised. Using the model for a public forum developed from the National Issues Forum, the Committee implemented a college-wide, faculty in-service workshop: Making Choices for Student Success: How Do We Get The Results We Want?

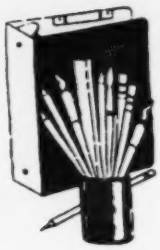
The National Issues Forums (NIF) have become an important method for building enlightened deliberation on civic issues. The NIF model was chosen because it had attributes which lent themselves to an informed dialogue regarding student success. We were attracted to the model because it stresses civility. The group process is aimed at avoiding polarization over simple binary choices. Instead, it stresses a more positive approach which provides a number of choices, some overlapping, to keep the deliberations moving ahead in a positive way. Because it avoids polarization, it also keeps the subtlety and nuance in issues. In addition, the NIF requires a mechanism for creating an informed audience. Participants are asked to read materials which assure that the audience shares a common body of knowledge. The Committee emulated these materials and created a 30 page booklet which not only defined the issues, but fully elaborated each of the four positions historically, philosophically, and pedagogically as a basis for discussion.

On November 6 the College's full-time faculty and administration (approximately 300) gathered in the College Arts Center for a four hour discussion/forum on building student success. The discussion centered around an airing of these four basic choices in an approach to teaching: *Choice #1: Promote Subject Matter/Discipline Mastery* • *Choice #2: Prepare Students for Jobs, Careers, and the Practical World Beyond School* • *Choice #3: Promote Personal and Emotional Growth* • *Choice #4: Prepare Students to Change Society.* The thrust of the in-service was to relate how focus on/or preference for one of these choices may influence a teacher's method for promoting student success. The forum began with a summary of the basic facts at College of DuPage involving retention: Who Stays? Who Leaves? and Why? Following this introduction, all participants took a pre-test on attitudes toward each of the four choices for promoting student success. The pre-test questions enabled members of the audience to assess their attitudes toward the four choices in general and their sensibilities about student success in particular. Following the pre-test, facilitators raised the issues detailed in the forum booklet. Each choice was discussed with much interaction among the faculty audience. The facilitators worked through the issues in turn, keeping the focus on their relation to student success, and moving the faculty and staff quickly through a full, and thorough discussion of the issues. At the close we took the post-test and evaluated the entire forum project.

Is an instructor hired to
- **Impart information?**
- **Train a student for an occupation?**
- **Promote personal growth?**
- **Develop a civic sense?**

To support the forum, the Committee developed a video tape on student attitudes toward aspects of the College, a detailed booklet setting out the four choices, pre-test and post-test on faculty attitudes, an evaluation instrument for the forum, and a video tape of the forum to be used at subsequent events.

The Pre-Test established the spectrum of faculty opinion on the choices. The Post-Test indicated that over 95% of the faculty made at least one significant change in opinion as a result of the debate. Evaluations were overwhelmingly positive and indicated that fewer than 5% of the group were ambivalent or disagreed with the principle or thrust of the day. In the open-ended evaluation questions, many in the audience felt the event was useful because it had "enabled them to identify their own perspectives" and many found it caused them to "think deeper about the issues."



Faculty Strategy - Honorable Mention
Strategy/Initiative: EMPHASIZE READING, SPEAKING AND WRITING IN THE MATHEMATICS CLASSROOM
Submitted by: Borough of Manhattan Community College
Dr. Stephen Curtis - Acting President
Contact Person: Dr. June L. Gaston - (212) 346-8547

I have participated in many faculty development activities which focused upon the creative use of reading, writing and speaking to facilitate the student learning process. I am now a devotee of activities which incorporate reading, writing and speaking as a means to help students learn mathematics and to help assess whether they have mastered course content. For example, when assigning research papers to Liberal Arts students, I give freedom in choosing research topics, but I stipulate that students may not consult standard mathematics textbooks, encyclopedias, and library reference books. They are required to refer to current periodicals and journals and/or interview reputable community leaders. When appropriate, I urge them to use their fellow-students, co-workers, friends, and family members for surveys. Above all, I request that their papers be personally relevant and that they justify this relevance in their writing. Students have written on problems which cannot be found in any mathematics textbook; for example, they used mathematics to: Create Music • Calculate the Cost of Building a Home Recording Studio • Determine the Cost of Producing a Documentary • Analyze Methods of Birth Control • Plan a Trip • Plan a Birthday/Dinner/Sweet Sixteen/Tuition Party • Analyze Commuting Costs for Students at the College • Analyze a Wedding Budget.

I have given this writing assignment as an individual project and also as a group project. No matter how I assign it, my students amaze me with their applications of the mathematical principles they have learned. The score I assign is twenty percent of the student's final course grade.

To improve learning in math, have students do more reading, speaking and writing. On this page are the results.

I use graphing calculators in teaching my Algebra, Precalculus and Calculus classes. Because students sometimes choose to purchase calculator models other than the one our department provides, I explain both general calculator functions and notations as well as some of the differences/inconsistencies; thus students are more able to pinpoint errors when they read and compare display results. I also use worksheet exercises requiring both solutions and predictions to promote speaking and writing mathematically to facilitate understanding and use of calculators, and to encourage critical thinking about mathematics course content. I have noticed that some of my students will write descriptions and conclusions at length, while others prefer to be brief and include detailed diagrams. All of my calculator activities are accomplished with students organized in pairs or small groups, so there is normally a good deal of discussion concerning their observations, predictions, and conclusions; I consider this (speaking) an essential part of their learning experience.

Rather than award a grade for completion of the worksheets, I strive to quiz these students each class session -- and vary the quiz guidelines in order to enliven the learning process with unexpected infusions of reading, speaking and writing. For example, I sometimes quiz students in collaborative groups. Using one strategy, each group must select one person who will write out solutions agreed upon by all group members. Each group must discuss and select appropriate solutions and edit the final copy; each group member must sign this agreed-upon copy prior to submission. Using an alternative strategy, I require that every student in the group submit a quiz. The final quiz score awarded each group member in this case is the average of the individual quiz scores; thus, group members find it feasible to edit all individual quizzes prior to submission. In short, students must listen carefully to determine how they should proceed, and they must be able to effectively present/discuss/defend/record their solutions using appropriate mathematical language and notation in their peer groups.

I also teach a mathematics course for students in our Early Childhood Education Program. I begin the first session by encouraging these students to think about mathematics, how they were taught, and how they plan to teach; the channels of oral and written communication are opened through the use of a questionnaire which students answer individually then discuss in small groups. My concluding discussion focuses on the publications and positions of major educational organizations so that the students will be familiar with current trends and understand what is expected of them as future educators. During this course, I have students write lesson plans for child-students and write evaluations of one another at the end of twenty-minute mini-lessons during which their fellow students role play a particular age group. Students have shown an increasing level of insight in the speaking/writing activities, which leads them to effectively organize and apply their knowledge of course material, develop creative applications which will help them interpret this material to others, and write positive, constructive critiques, in a peer-evaluation process. The latter involves the entire class rating mini-lesson presentations.

I have enjoyed watching my students begin to effectively speak and write mathematically, and to think more positively about mathematics as they interact, personalize the subject, and make it more relevant to their lives and their goals.

Curriculum Strategy - Winner
Strategy/Initiative: INTEGRATED ARITHMETIC AND ALGEBRA
Submitted by: Seminole Community College
Dr. Earl S. Weldon - Chief Executive Officer
Contact Person: Bill Jordan - (407) 323-1450

$$\frac{a + b}{c}$$

Mathematics is very sequential in nature in that a particular course must be completed before attempting the next course in the sequence. It is a widely held belief that a thorough knowledge of arithmetic is a prerequisite for success in algebra. Upon completion of a project to identify prerequisite skills for beginning algebra, I was impressed with how little arithmetic one needed to know to learn Beginning Algebra. Thus I concluded that a lack of arithmetic skills was not the reason for the high non-success rate in Beginning Algebra. I shared my findings and feelings with, among others, Bill Palow. He had just completed a project using an arithmetic pretest with Beginning Algebra students. He compared the entering arithmetic skills and the grades earned in Beginning Algebra. He found no significant relationship between the entering arithmetic skills and success in Beginning Algebra. I now know of three similar studies that reached the same conclusion. The implications of these findings are staggering. Math educators are wasting ours and our students time by requiring developmental entry level students to first take arithmetic in order to obtain prerequisite skills for Beginning Algebra. However, these arithmetic skills are needed to function in everyday life. Palow and I discussed these implications and decided that rather than first present arithmetic and then algebra, the two should be presented side by side in an integrated spiraling approach. We hoped that students would learn the necessary arithmetic and algebra, see the relationship between the two, and use each to reinforce the other.

At Seminole we have a Prealgebra course which is followed by Basic Algebra. Integrated Arithmetic and Algebra is a 6-semester hour course that has the same content as Prealgebra and Basic Algebra combined, thus allowing the student to complete his/her developmental mathematics requirements in one semester rather than two.

Integrated Arithmetic and Algebra has been taught at Seminole for the past three semesters, both by myself others. The results are very promising. The following success rates are for first attempts where success is defined as earning a grade of A, B, or C. The success rate in Integrated Arithmetic and Algebra (56.5%) compares very favorably with the success rates of Prealgebra (60.5%) and Basic Algebra (52.7%) individually, which supports our hypothesis that arithmetic is not a prerequisite for beginning algebra. Of our students who successfully complete Prealgebra, 61.6% are successful in Basic Algebra. This means that (60.5%)/(61.6%) = 37.3% of our students entering Prealgebra are successfully completing Basic Algebra. Comparing this success rate (37.5%) with the success rate in Integrated Arithmetic and Algebra (56.5%), we see that 19.2% more of our students are successful in Integrated Arithmetic and Algebra than Prealgebra followed by Basic Algebra. Even more significant is that the success rate in Integrated Arithmetic and Algebra is 51.2% (19.2%/37.5%) better than the success rate in Prealgebra followed by Basic Algebra. In order to see if our hypothesis that integrating the two subjects would lead to a better understanding of both, a comparison between the success rates of the two groups of students in the next course, Intermediate Algebra, was also done. Of those students who successfully complete Prealgebra, 30.8% are successful in both Basic Algebra and Intermediate Algebra. Of those students successfully completing Integrated Arithmetic and Algebra, 71.8% are successful in Intermediate Algebra. Since the entry level is the same for Prealgebra and Integrated Arithmetic and Algebra, we also did a comparison with students entering Prealgebra and with those entering Integrated Arithmetic and Algebra and then successfully completing Intermediate Algebra. Of those students entering Prealgebra, 18.6% successfully complete Intermediate Algebra. Of those entering Integrated Arithmetic and Algebra, 37.3% successfully complete Intermediate Algebra. This means that the success rate through Intermediate Algebra is 100% better for those entering Integrated Arithmetic and Algebra than those entering Prealgebra. Based on these statistics, you can see why we are excited about the future of this course.

Finding: No significant relationship between entering arithmetic skills and success in beginning algebra.

The successful strategy reported here may surprise the reader.

The success rates in the above courses may seem disturbingly low, but they are in line with success rates nationally. Seminole also has very rigorous courses exceeding the content of similar courses at other institutions.

In addition to integrating arithmetic and algebra, this course also emphasizes critical thinking and writing. Exercise sets include writing exercises requiring students express understanding of a concept. Answers can not be found in the text, but require the student to think about, to understand, and to explain a concept.

In summary, we feel that this project meets all of the criteria given. Students are targeted whose entry level mathematics skills are on the developmental level. Follow up studies have assessed the success of the course. The approach is creative, innovative, and can be easily adopted by other colleges.

Curriculum Strategy - Honorable Mention
Strategy/Initiative: PROJECT QUICKSTART
Submitted by: Central Florida Community College
Dr. William Campion - Chief Executive Officer
Contact Person: John Simpson - (904) 237-2111 x 357

Targeting the Population: Institutions of higher education are faced with a great challenge in educating those students who are not fully prepared to perform college level work. All first time college students in Florida are tested for the best placement possible in the college and field of their choice. As many as 50% tested may fall below the minimum scores required by the state and are then required to take college preparatory courses in either math, English, or reading. Many of these students take advantage of the Florida open door policy to enter community colleges. CFCC is beginning the third year of a program for these students called Project Quickstart.

This program sought to answer the main dilemma posed by disadvantaged/non-traditional students -- their college work and expense is increased by adding required courses in basic skills, yet they have little chance of success in college if these students lack the money needed to pay for extra semesters, so acquiring these skills in the least expensive and least time-consuming way is important to them. CFCC decided that an intensive summer program introducing students to the entire scope of college, both what it offers and what it requires, works better in preparing these students than taking up to three extra semesters in full length courses in the needed skills areas.

Disadvantaged students often lack money to pay for extra semesters. On this page are ideas for helping them.

The Program's Adaptability Lies in Coordination of Offices: In 1990 and following, many areas of the college -Counseling, School Relations, Learning Resources, the College Skills Lab, the Communications Division, the Mathematics Division, Student Support Services Program, Financial Aid, the Office for Minority and Handicapped Services, JTPA, and the Educational Opportunity Center (EOC) --came together to coordinate the program.

Description--Innovative Holistic Program: Students were offered the following incentives if they qualified for the program: • Complete financial aid assessment and application assistance • Free tuition (if eligible for financial aid) • Reduced Cost placement testing at CFCC's test center • Five to Ten credit hours college work • Team-building, group and individual goal attainment offered by trained professionals at Charter Springs Hospital • Instruction in basic skills areas • Instruction in study skills, library use, and computer assisted education • Individual tutorials on IBM 386 networked personal computers in basic and advanced English, algebra, and reading skills • Personal and academic counseling and individual help in career and academic planning • An awards banquet upon completion of the program • Guaranteed registration into "best choice" courses for the subsequent semester.

Eligibility Encourages Success: Because of the intensive nature of the program, scores for admittance were set in the higher range of cutoffs determining placement in college prep courses. No students who scored above college prep guidelines (25th to 30th percentiles and below) were allowed into the project. Students were given statewide standardized tests and had to fall within the top one-fourth of the lowest quartile to enter.

Design -- Group Spirit, Intensity and Academic Rigor: The design of the program was intensive; the first year thirty graduating seniors were recruited from area high schools and met from six to eight hours per day four days (the fifth day--Friday--was open teacher assisted labs) a week for seven weeks in the summer of 1991. The Project began with fostering a group identity aimed at goal achievement which was provided by Charter Springs Hospital as a way to involve community resources. In 1992 the program was expanded to fifty-five students, including older students. All of the participants were tested before they entered and post-tested as they completed the program. Their coursework and final exams were the same content as the traditional courses with additional work in study skills, library use, and goal setting. All students were exit tested with the same exams used to assess other disadvantaged students.

Results -- Measures of Success: The program is an unqualified success. 97% of the participants (29 of 30) completed the program the first year. 93% (51 of 55) completed the program in 1992. The completion rate of CFCC disadvantaged students in general is 61%. The grade point average of first time completers of college prep courses is a little over 2.00. The combined GPA of the first year Quickstart students was 3.24 -- second year 2.94. 100% of the first year Quickstart participants were enrolled for regular college courses in the fall semester at CFCC and 87% of the second year. Results of a follow-up study done January 1992 showed that 24 of 29 first year students were currently enrolled (83%), and were carrying a combined all college grade point average of 2.66. Further follow up on the first year (1991) students showed that in the fall of '92 (one year later) 25 of 29 students (86%) were still enrolled in the college with a G.P.A. of 2.45; Average college prep students achieve less than a 50% returnee rate after two semesters, dropping to 30% after one full year.

Highest Award: The Florida Association of Community Colleges chose Project Quickstart as one of the top five educational programs of 1992 in the state of Florida.

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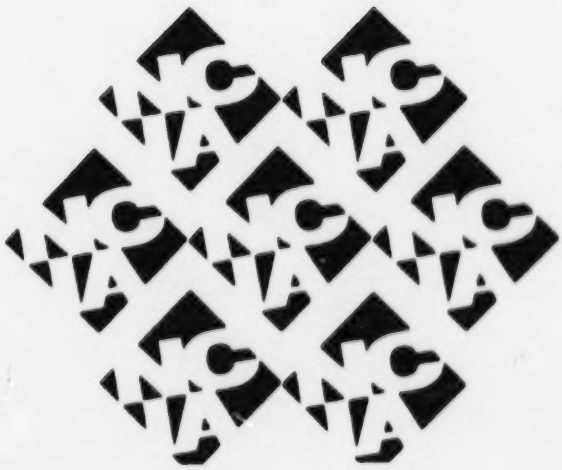

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